Christian Miehe

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Current position

Full Professor for Applied Mechanics, University of Stuttgart, Faculty of Civil and Environmental Engineering

Education

Diploma Degree (Dipl.-Ing.) in Civil Engineering, University of Hannover, Germany (1983)
Doctoral Degree (Dr.-Ing.), University of Hannover, Dept. of Civil Engineering, Germany (1988). Thesis on Coupled Thermomechanical Processes.
Habilitation Degree (Dr.-Ing. habil.), University of Hannover, Dept. of Civil Engineering, Germany (1992). Thesis on Finite Plasticity.

Research interests

Nonlinear Continuum Mechanics and Continuum Thermodynamics.
Phenomenological Constitutive Theory. Elasticity, Viscoelasticity, Plasticity, Viscoplasticity.
Materials with Microstructures, Homogenization Approaches, Computational Micro-Macro-Transitions for Heterogeneous Materials and Multi-Scale-Problems.
Computational Mechanics of Solid Materials and Structures, Finite Element Formulations and Solution Algorithms.
Coupled Problems. Thermoelasticity, Thermoplasticity, Solution Algorithms for Coupled Problems.
Finite Shell Theories and Element Design for Nonlinear Material Response at Large Strains.
Parameter Identification of Phenomenological Constitutive Equations. Experimental Mechanics.

Career

Full Professor, Institute of Applied Mechanics (Civil Engineering), University of Stuttgart, since 1995.
Professor (C3) of Continuum Mechanics, Institute for Structural and Computational Mechanics, University of Hannover, 1995.
Lecturer, Institute for Structural and Computational Mechanics, University of Hannover, 1991-1995.
DFG Research Fellowship, Division of Applied Mechanics, Stanford University, 1989-1990.
Assistant Lecturer, Institute for Structural and Computational Mechanics, University of Hannover, 1984-1989.

Professional activities

Editorial Boards
International Journal of Numerical Methods in Engineering, since 2000
Material Science Research International, since 2001
Journal of Multiscale Computational Engineering, since 2002
Computer Methods in Applied Mechanics and Engineering, since 2005
University service
Chairman of the Master Programme ‘Computational Mechanics of Materials and Structures (COMMAS)’

Summary of journal publications

Journal	**Impact factor**	**Number of papers**
Journal of the Mechanics and Physics of Solids	2,364	5
International Journal for Numerical Methods in Engineering	1,691	7
Computer Methods in Applied Mechanics and Engineering	1,252	17
International Journal of Solids and Structures	1,080	4
Other papers in refereed journals		18

Selected publications (max. 5)

C. Miehe & N. Apel [2004], *"Anisotropic elastic-plastic analysis of shells at large strains. A comparison of multiplicative and additive approaches to enhanced finite element design and constitutive modelling"*, International Journal for Numerical Methods in Engineering, Issue 61 (2004), pp. 2067-2113.

C. Miehe, M. Lambrecht, E. Gürses [2004], *"Analysis of material instabilities in inelastic solids by incremental energy minimization and relaxation methods: evolving deformation microstructures in finite plasticity"*, Journal of the Mechanics and Physics of Solids 52 (2004), pp. 2725-2769.

C. Miehe [2003], *"Computational micro-to-macro transitions for discretized micro-structures of heterogeneous materials at finite strains based on the minimization of averaged incremental energy"*, Computer Methods in Applied Mechanics and Engineering 192 (2003), pp. 559-591.

C. Miehe, J. Schröder & M. Becker [2002], *"Computational Homogenization Analysis in Finite Elasticity: Material and Structural Instabilities on the Micro- and Macro-Scales of Periodic Composites and Their Interaction"*, Computer Methods in Applied Mechanics and Engineering 191 (2002), pp. 4971-5005.

C. Miehe [1998], *"A Constitutive Frame of Elastoplasticity at Large Strains Based on the Notion of a Plastic Metric"*, International Journal of Solids and Structures, 35 (1998), pp. 3859-3897.

Other relevant information

Workshop and Conference Committees

Scientific Committee

- 7th and 8th International Conferences on Computational Plasticity. Fundamentals and Applications, 2003 and 2005.
- 1st, 2nd and 3rd GAMM Seminars on Microstructures, 2003, 2004 and 2005.
- 4th World Congress on Computational Mechanics, Vienna, 2002.

Organizing Committee

- Minisymposium on Anisotropic Finite Plasticity (Chairman and Organizer), GAMM Annual Meeting, Bremen, 1998.
- Minisymposium on Homogenization Methods (Chairman and Organizer), GAMM Annual Meeting, Metz, 1999.
- EUROMECH Colloquium 394 on Theory and Numerics of Anisotropic Materials at Large Strains (Co-Chairman and Co-Organizer), Graz, 1999.
- IUTAM Symposium on Computational Mechanics of Solid Materials at Large Strains (Chairman and Organizer), Stuttgart, 2001.
- 3rd GAMM Seminar on Microstructures (Chairman and Organizer), Stuttgart, 2004.
- Minisymposium on Microstructures (Chairman and Organizer), GAMM Annual Meeting, Dresden, 2004.
- Minisymposium on Multiscale Phenomena in Mechanics (Co-Chairman and Co-Organizer), ICTAM 2004 International Congress on Theoretical and Applied Mechanics, Warsaw, 2004.

Editorial Works

- C. Miehe, IUTAM Symposium on Computational Mechanics of Solid Materials at Large Strains, Kluwer Academic Publishers (2003).
- C. Miehe, Special Issue on Advances in Computational Plasticity, Computer Methods in Applied Mechanics and Engineering Vol. 193, Issues 48-51 (2004).